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STUDY PROJECT

MINE AND BOOBYTRAP WARFARE: LESSONS FORGOTTEN

BY

LIEUTENANT COLONEL PHILIP W. CARROLL III, EN

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USAWC MILITARY STUDIES PROGRAM

MINE AND BOOBYTRAP WARFARE: LESSONS FORGOTTEN
AN INDIVIDUAL STUDY PROJECT

by

Lieutenant Colonel Philip W. Carroll III, EN

Colonel Hugh Boyd
Project Advisor

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U.S. Army War College
Carlisle Barracks, Pennsylvania 17013
29 February 1988

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ABSTRACT

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TABLE OF CONTENTS

ABSTRACT.....	11
CHAPTER I. INTRODUCTION.....	1
II. HISTORICAL PERSPECTIVE.....	3
III. CURRENT CONFLICTS.....	11
IV. HISTORICAL MEASURES -- HISTORICAL AND PRESENT.....	14
V. CONCLUSION.....	18
BIBLIOGRAPHY.....	20
INCLOSURE 1.....	21

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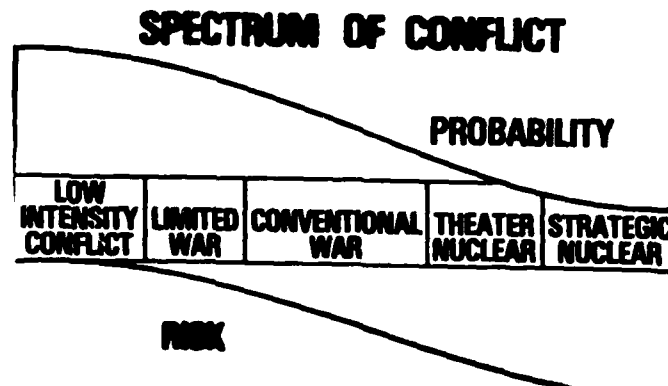
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MINE AND BOOBYTRAP WARFARE: LESSONS FORGOTTEN

CHAPTER I

INTRODUCTION

Conflict has recently been defined in terms of level of intensity, the type and size of the units involved. These levels of conflict are identified as low-intensity, mid-intensity and high-intensity. In addition to describing the levels of conflict, probability is also assigned to each level of intensity indicating that as you progress up the level of conflict from low to high, the probability of the conflict will decrease. The graph shown below gives a pictorial version of the idea that probability and intensity are inversely proportional.



Each level of conflict contains a variety of war fighting means used to achieve success on the battlefield. Most often associated with changing levels of conflict is the use of heavy forces -- specifically armor. It can be

shown that the changing spectrums of conflict increase with the increased use of armor. Similarly, the other means of combat can be applied to the spectrums of conflict, artillery, infantry and the wide spectrum of the support forces required. Another aspect of the levels of conflict is in the intensity of the casualties resulting from that level of war. It is inherent in the definition of intensity to understand the level of casualty in the highest end of the spectrum (nuclear war) is quite different from the low end of the conflict spectrum. It should be understood that the level and type of injury encountered at the lower end of the spectrum is of a near singular nature as opposed to the mass casualty nature of the type encountered at the upper end of the spectrum. As with the type of injury, so it is with the means to inflict the injury. The spectrum of means varies from the nuclear weapon at the upper end of the spectrum to the hand held weapon at the lower end of the spectrum. One aspect of war and also a type of weapon is the mine and boobytrap, and like all aspects of war, the use and intent varies with the intensity of the conflict. My purpose in this paper is to discuss some of the effects of mine and boobytrap operations through out at the spectrum of conflict with concentration on the lower end of the intensity spectrum. Additionally, I will look at current and past techniques of counter mine and boobytrap operations.

CHAPTER II

HISTORICAL PERSPECTIVE

To study the use of mines and boobytraps in modern history and to develop an understanding of the current day philosophy, the purpose of mining operations must be understood. Mines today are designed with explosives; however, the intent today is the same as the intent that Clausewitz talked about in his book on defense. Use terrain and develop obstacles to deny terrain to the enemy, to cannalize the enemy into terrain that is better suited to the defender than the attacker with the intent of the defender to take advantage of the situation and attack. The creation of obstacles to force the enemy to deploy in a certain way dates as far back as the Greek and Roman battles centuries ago. The only difference today is the advent of explosive type obstacles or mines and boobytraps and the formalization of mines and boobytraps as a weapons system.

The concepts of mine warfare today call for several purposes. Mines are used to control terrain -- much as Clausewitz would recommend. In the control of terrain, there are many aspects of the mine/boobytrap operations. Terrain can completely be denied to the enemy through saturation mining, mining with chemical agents to eliminate access or through a nuclear blast to contaminate the area.

most cases is time consuming and has limited results with the eventual breakthrough of the enemy forces. Another intent is to cannalize the enemy by placing obstacles in his path of advance that force the enemy or attacker to selected a new course of advance; an approach selected by the defender. This in effect allows the defender to take full advantage of the terrain and select the best time to go to the attack. Mines and boobytraps are intended to kill, wound and disable equipment and personnel with the least possible exposure to the defending force. They are also indiscriminant in whom they inflict casualties upon.

The first significant use of minefields in modern battle was during World War II. This period also had the first significant use of boobytraps, although historical evidence shows the use differed by theater of operations. While accurate statistics regarding the effects in terms of casualties were not kept, general information regarding the effects are available. Consider the type of combat in each of the two theaters and the type enemy force encountered; the difference in the types of mine/boobytrap operations and purpose takes on an interesting light.

In the European theater, including North Africa, the campaigns were fought against large size units -- divisions and corps. The enemy forces at the time were heavy in armor and anti-armor. Likewise the axis powers

were similar in size and mix. Denial operations took the shape of large minefields to counter the enemy advance or to cannalize his routes of advance or egress. Minefields were characterized by a massive investment in time, material and manpower. A good example exists in the European theater where one German engineer company laid in a single minefield 1296 tank mines in 54 rows of depth. Over the course of the month of April 1940, the company laid 6000 tank mines and 1700 personnel mines.¹ Clearing operations likewise were time intensive and often when the field was covered by direct or indirect fire, dangerous. Casualty reports from the European theater indicate roughly 16.4% of the battlefield casualties were caused by mines while only 1.4% resulted from grenades or boobytraps (no differentiation between the two).² During the same period, January - June 1944, the incidence of mining in the Pacific theater was .8% and the boobytrap or grenade was 6.2%. These figures show the reverse of the trend in the European theater making sense because of the type land battles that were fought.

With WWII, mine and boobytrap operations developed into a modern technology. It must be clearly understood that the difference in the two theaters was due to the type fight and the type fighter. We can draw some analogy to the levels of conflict and to the intensity spectrum in that the European theater was at the upper end of the intensity spectrum as we

define it today. The campaign in the Pacific was also at the upper end of the spectrum considering the final bombing and the use of nuclear weapons; however, a closer look at the Pacific will see a fight that tends towards the center of the mid intensity with relatively low use of armor, and a small unit type defense and offense. This perhaps gives support to the trend towards a greater use of the boobytrap or nuisance mining and less of a use of the conventional large scale minefield.

Korea provided an environment much like the European theater in the use of minefields with little use of boobytraps. Again, the type, size and heavy mix of armor forces the conflict towards the upper end of the intensity scale.

Viet Nam brings our most recent experience of mine/boobytrap and countermine operations into the historical perspective. The battlefield was much different than either the European/Pacific theater or the Korean conflict. It more resembled a scaled down ground campaign in the Pacific -- at least in terms of the use of boobytraps and mines. It is important now to address the reasons this use (boobytraps/mines) was preferred over the European style minefield.

Mine/boobytrap operations in Viet Nam like many aspects of the combat were uncommon due to the terrain , the combatants, the history of conflict in the area and the resources available. Unconventional war became the common or conventional means of fighting. Key targets during the time were key lines of communication and the need to inflict casualties. The nature of the terrain restricted the lines of communication to vary narrow corridors and roads, giving easy access to the enemy. Although the Vietnamese Communists did not subscribe to Clausewitz, there is strength in what Clausewitz has to say about the strength in small groups, operations in the interior and the attacking of the lines of communication. Our LOCs were key to operations in the country and the enemy saw the extended nature of the roads and took full advantage in disrupting the lines of communication. The Viet Cong capitalized on the terrain with an extensive program of nuisance mining. With knowledge of terrain, he was able to mine rice paddy dikes, place boobytraps along trails, mine roads and destroy bridges. He systematically attacked key targets and tailored his techniques to the terrain and to the weather. It is important to understand the difference between the standard minefield operations with the intent to slow, stop or canalize the enemy and the use of small groupings of mines or boobytraps on key routes to accomplish the same goal with much less effort and much less resource intensive.

The results, in 1967 enemy mines and boobytraps caused 4,300 casualties and approximately 70% of the combat losses in tanks and armored personnel carriers. In 1968 the casualty figure rose to more than 5,800. Again the accounting procedures for casualties caused by mine and boobytraps was not totally accurate because of the confusion over the classification of wounds by fragmentation -- these could have been by mortar, rocket or mine/boobytrap. That is to say that the figures presented are on the low side. Another indication of the effects of this type weapon is that during the period January 1967 thru May 1969, greater than 10% of all casualties were a directly recordable result of mines and boobytraps. In the 5 months of 1969, 12% KIA and 14.3% WIA are attributed to mines and boobytraps.³ It is evident from a quick review of the Viet Nam experience that mine and boobytrap warfare has taken on a new look. Further evidence of this new look is seen in the following medical accounting:

"In 1965, U.S. forces were most concerned with establishing and defending their bases, and only in 1966 did they launch operations to check the enemy offensive. By 1968, troops were usually engaging the enemy in his defensive positions. Wounding from small arms fire decreased from 42.7 percent in June 1966 to 16 percent in June 1970, while the percentage from fragments (including mine and boobytraps) rose from 49.6 percent to 80 percent in 1970."⁴

Graphically, the comparison of casualties by cause is shown on the following page for the three conflicts discussed thus far. It is important to note the significant

increase in the number of casualties from mines and boobytraps. Also it should be noted that the figures for fragment casualties during WWII and Korea include significantly larger numbers of bombings and artillery attacks. With this in mind, the increase in the mine and boobytrap casualties takes on even greater meaning.

PERCENT OF DEATHS AND WOUNDS ACCORDING TO AGENT, U.S. ARMY,
IN THREE WARS: WORLD WAR II, KOREA, AND VIETNAM⁵

Agent	DEATHS			WOUNDS		
	WWII	KOR	VN	WWII	KOR	VN
Small arms	32	33	51	20	27	16
Fragments	53	59	36	62	61	65
Boobytrap, mines	3	4	11	4	4	15
Punji stakes						2
Other	12	4	2	14	8	2

The doubter may say that the experience in Vietnam was an anomaly of war and further study is not worth the time and effort. I differ, in that the U. S. Army has recently developed the Light Infantry with strategic mobility, rapid employability designed to fight low-intensity conflict as a

primary mission but, also having the capability to fight mid-intensity and high intensity with some augmentation. Low-intensity conflict is most probable to occur and is most likely to occur in the developing countries, the "Third World". Let's not lose sight of our most recent experiences because the hot spots in the world today are finding the same kind of mine and boobytrap warfare we encountered 20 years ago.

ENDNOTES

1. Engineer Agency for Resources Inventories, Department of the Army, Landmine and Countermine Warfare Western Europe - World War II, July 1973, pp 175.
2. Gilbert W. Beebe and Michael E. DeBakey, Battle Casualties, Banner House, 1952, pp 131.
3. Engineer Agency for Resources Inventories, Department of the Army, Landmine and Countermine Warfare, Vietnam 1964 - 1969, July 1972 pps 1 & 29.
4. Vietnam Studies - Medical Support of the U. S. Army in Vietnam 1965 - 1970, pps 53 - 54.
5. Vietnam Studies - Medical Support of the U. S. Army in Vietnam 1965 - 1970, pp 54.

CHAPTER II

CURRENT CONFLICTS

MALAYSIA: The Malaysian Security Forces (MSF) are currently confronted by a force of approximately 1500 communist terrorists sometimes referred to as the Communist Part of Malaysia (CPM). The CPM operates on the northern border between Thailand and Malaysia. Their size is small and their tactics are harrassing in nature, using mines and boobytraps along roads, trails and paths that are frequented by the MSF. In joint border surveys with the Thai and Malaysia governments, 6 - 8 casualties per month were netted due to mine/boobytrap activity.⁶

Most of the mine incidents have occurred during search and destroy missions conducted by dismounted troops. Some occur during the reoccupation of the MSF fire bases. The devices most encountered are a mix of electronic pressure and trip wire devices. Most of the trip wire devices are detectable but the buried wires or electronic devices are difficult to see and often cause casualties. Statistics for a two year period in 1985 and 1986 show a total of 19 and 30 casualties respectively with the majority inflicted against the MSF and a small number against the civilian police. Because there is seldom a direct fire fight with the CPM, the mine and boobytrap casualties account for all losses

other than sickness or accidental injury.⁷ Techniques employed by the MSF to counter the threat will be discussed later.

THAILAND: The enemy encountered in Thailand is the familiar People's Army of Vietnam (PAVN) largely along the border with what is now Kampuchea. The tactics are not at all different from our own experiences of 20 years ago. Casualty statistics for 1986 in the Suranaree task force sector reflect 53 KIA and 202 WIA caused by mine and boobytrap activity.⁸ A review of Thai operations in the border sector was conducted during a visit of the United States Army Team On Low-Intensity Conflict in the March - April 1987 time frame. The operations involved the dislodgement of PAVN from two hills in the area. Each hill was reinforced considerably by the use of mines and boobytraps. The result was daily progress of 400 - 500 meters of advance per day, with a cost of 200 wounded and 36 killed for the entire operation. The article inclosed provides greater detail. (Incl 1)

The need for mines and boobytraps is again caused by the intensity of the conflict, the type of terrain and the resources available. Movement is restricted to foot paths, trails and roads that serve as critical lines of communication and then serve as the key targets for the

enemy to attack. Here Clauswitz makes it clear that a defender can at the right opportunity go on the attack.

ENDNOTES

6. U. S. Army Troop Support Command, Low-Intensity Conflict Project Office, Report of the U. S. Army Low-Intensity Conflict Team on Malaysia, August 1986, pp 4.

7. U. S. Army Troop Support Command, Low-Intensity Conflict Project Office, Report of the U. S. Army Low-Intensity Conflict Team on Malaysia, August 1986, pp 6.

8. U. S. Army Troop Support Command, Low-Intensity Conflict Project Office, Report of the U. S. Army Low-Intensity Conflict Team on Thailand, April 1987, pp 6.

CHAPTER IV

COUNTER MEASURES -- HISTORICAL AND CURRENT

The critical element in counter measures to mine and boobytrap operations is education and training. Perhaps this is the weakest link in our current doctrine especially in the combat engineers considering the role of the newly formed Light Infantry Divisions with their organic Light Engineer Battalion. The U. S. Army's experience in the type operations that we encountered in Viet Nam is reaching 20 years and beyond in their personal experience and much of the expertise has already left the force. There is little training conducted in the "Light Forces" that even resembles the need for counter mine/boobytrap training that can be seen in the conflicts in both Thailand and Malaysia. The exception to the training shortfall is in the Special Forces units. There are certain critical events that must take place:

1. Understand the threat in the low intensity conflict will use mine/boobytrap operations much like those currently experienced in Malaysia and Thailand and like our Viet Nam experiences of 20 years ago.

2. The enemy force's doctrine for employment will change very little from our past experience simply because

It is simple, resource feasible, trainable and easily exportable, and historically it works.

3. Our current training and education program especially for divisional engineers organic to the Light Infantry Divisions must train to the standards we previously subscribed to in the Viet Nam era.

Standard techniques of mine clearing now taught in the advanced individual training courses and officer basic and advanced courses are basic to standard pattern sweeps, normally to NATO standard. Doctrinal manuals such as FC 90-13-1 COMBINED ARMS COUNTEROBSTACLE OPERATIONS: THE IN-STRIDE BREACH do well for the mid to high-intensity large European type minefields. That is not where we expect the next conflict, and it does not speak at all to the needs in the low-intensity conflict.

I would suggest one way of looking at the training requirement is to analyze the spectrum of conflict that we looked at in the beginning of the paper, overlay the probability of occurrence and then tie the type training most likely to be needed to counter the most probable mine/boobytrap operations to be encountered. In doing this it becomes evident that the most likely conflict will be towards the low end of the intensity scale, the most probable mine/boobytrap operation will be towards the low end of the spectrum (a higher concentration of nuisance

mining and boobytraps that attack key lines of communication, trails, paths and constricted areas). The proof of this last statement is in history and current low-intensity conflicts. Training emphasis must then focus the time available on the most probable type operation we may expect to encounter with less training in the old doctrinal standard pattern minefield and countermine operations.

In this regard there are still accurate training manuals that capture the past experience with lesson plans, POIs and procedure. These should be adapted for either school house training or be developed into unit training packages and exported by the Engineer School to all divisional units and to all Corps Combat Engineers.

Aside from the training addressed above there is one other element that is worth exploring. That is the use of dogs trained in the detections of explosives. In 1969, the first platoon of 28 detector dogs was assigned to Viet Nam for evaluation. It had varying degrees of success in the detection of both mines/boobytraps and tunnels. The progress of the dogs was encouraging and should be developed further for current day employment in the low-intensity conflict. Again if you look into current day problems, both Malaysia and Thailand have used the mine dogs to some degree with success but have found their use is restricted to certain types of terrain. The dogs do not work well in the

tall grasses or in water covered areas such as rice paddies. Other techniques employed by both Thailand and the MSF involve education and training as described above which are critical to success.

CHAPTER IV

CONCLUSIONS

Our current difficulties in the area of low intensity mine/boobytrap operations and counter operations can best be articulated in this letter:

- "1. The need for a comprehensive Research and Development program in the Countermining Warfare area is a vital and important one. Our experience in Viet Nam with mines and boobytraps has not been pleasant. Mining incidents have accounted for the bulk of our vehicle combat losses and are a major source of personnel casualties. The hardware available to detect or destroy mines or boobytraps has been of limited value. Mine detectors are unacceptably slow or practically useless particularly when operating against non-metallic mines.
2. The increasing use of non-metallic mines, both homemade and factory produced items e.g., the PM-60, has essentially thrown us back upon visual means as the primary mode of detection. The lessons we have learned here in Viet Nam should not be interpreted as an isolated problem particularly in this war only. The success the VC have achieved in off road mining is equally applicable to conventional conflicts. A brief review of mines and delivery systems currently in, or under opponents in future wars are following similar developmental programs. Basically, systems have outstripped the capability of our counter systems to detect and destroy them.
3. Current counter mine systems development appears to be fragmented into a number of projects, each responsive to separate Quantitative Material Requirements. The magnitude of the problem merits a consolidated program encompassing the entire problem area, including both active and passive aspects, with a single project manager or agency in charge in order to provide the close coordination required. The scope of the program should be enough to permit flexible and wide ranging approach to investigations of all possible solutions with a charter permitting basic research as well as hardware development. The proposal also implies an adequate, continuing source of funds.
4. Vietnam has seen the emergence of mines as a major weapons system, used on a scale, relatively speaking, never before encountered. The implications of this, in view of the newer developments in mine technology for future wars, are obvious.

We urgently require a long term countermine systems development program."

This letter was extracted from a 29 July 1969 letter from the Deputy Commanding General, Vietnam, to the Chief of Research and Development, Department of the Army.

It seems that little has changed. Our current detection systems are less than what we have expected, the training has reverted to the needs of the basically European theater and the likelihood of conflict and the likelihood of the type force we will encounter is what history taught us 20 years ago. The intangible aspect beyond casualties, beyond equipment damage and destruction is the mental and emotional aspect of war, where the injuries occur yet the enemy cannot be seen. This is the war of mines and boobytraps. If we do not change our thinking, our training and take advantage of history and current day conflicts, then we are our own worst enemy.

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Battle for Suravegnom Landmines, booby traps hamper Thai advance

By Pichet Sereethorn
File by Pradya Wuthichumrern

NAM YUEN, Ubon Ratchathani — Thai army officers fighting the Vietnamese intruders entrenched on strategic hills inside the Thai territory near Chong Bok Pass described the battle which started early this year as "the toughest ever" in the border area. They also expect it to continue for a long time to come.

The officer of the Suravegnom Suranaree Force, which is responsible for border defence in the northeastern region, said the military drive to push back about 300-500 Vietnamese intruders from Kamphuchee has been raging for two months.

The officer, who declined to be identified, said Thai soldiers, early in January began to search for the hideouts of the battalion-size Vietnamese force in the rugged mountains and jungle terrain along the Thai-Kampuchean border. However, the real drive was launched in February when ground troops, supported by air strikes as well as heavy artillery and mortar barrages, clearly advanced towards the three strategic hills No. 382, 408 and 500 close to the remote Chong Bok area.

The progress of government troops was restricted to only 400-500 metres a day as they suffered for ammunition, according to the officer who said a high number of casualties on the Thai side was caused by landmines and booby traps planted by the Vietnamese intruders.

The Thai army also faced stiff resistance from Vietnamese troops, who have the advantage of better positions and are supported by their neighbours' heavy weapons.

A military report said that 36 Thai rangers and soldiers have been killed while more than 200 wounded — at least 50 of them seriously — during the operation.

Military sources could not confirm the Vietnamese losses but said the intruders also suffered heavy casualties May 1 in Narathiwat. In-principle, the army spokesman earlier said that the bodies of 19 Vietnamese soldiers were found on March 25 at the scene of the fighting near the border post.

Chong Bok, adjoining Thailand, Kamphuchee and Laos, once served as an infiltration route for Kampuchean coalition guerrillas fighting about 100,000 Vietnamese soldiers in Kamphuchee.

The officer said that several air strikes mounted by the Thai F-5 fighters during last month, didn't prove effective because the Vietnamese intruders had strongly fortified their positions by digging tunnels in the hills.

The Thai forces had difficulty in transporting logistic supplies in the frightful difficult terrain. Each ground troop could carry food and water

enough for seven days, said the officer. "After that they had to wait for supplies from the following units," he added.

He said the Vietnamese positions are located about three to five kilometres inside the Thai territory in this border district and the adjacent Nakhon Phanom district. The intruders are believed to have dug in for several months.

The heaviest fighting took place on Mar 25 when the Thai troops successfully launched separate attacks on Vietnamese positions in an attempt to retake two strategic hills, said the military sources.

More than ten troops were killed and about 20 stray artillery shells hit the three villages of Ruan Kor, Baan Nuan Saeng and Baan Pad Uum, about 15 kilometres from the frontier.

Two villagers, identified as Pui Palaya, 70, and Butri Saha, 60, were killed and 12 houses were damaged.

Sud Nirananda, a 45-year-old villager of Ruan Kor, said his village was hit by stray shells and described the incident as the heaviest during the past two years.

He said four cattle heads were killed and several others injured on the same day. Damsa Katsin, Udon Ratchathani governor, said the provincial authorities have prepared an evacuation plan for the three border villages which have frequently been hit in border fighting.



SOME wounded troops from Chong Bok battle wait for treatment at Suprasitthaprasong Military Hospital in Ubon Ratchathani Province.

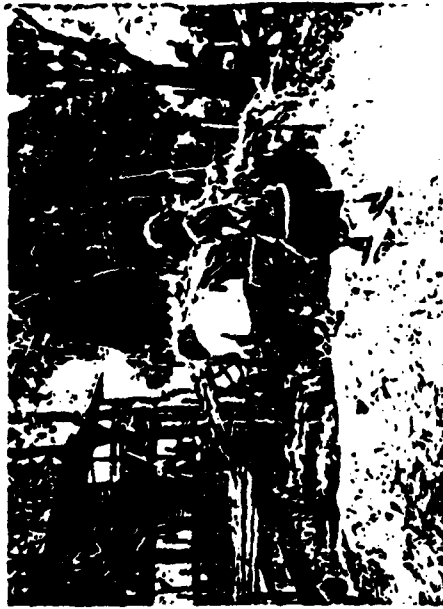


A defence volunteer, armed with an AK47 assault rifle, patrols on a bicycle in Baan Kor Village about 15 kilometres from a battle scene.

However, he said the villagers haven't lost hope and insisted to stay in their villages.

The military officer said he did not expect the operation to end soon and the Thai forces are searching for an effective method to gain more bunkers and provided them with construction materials.

The sources said the Thai troops have been using Pao troops from the border into Baan Choa, a former Kamphuchee and attack them from the rear, and the intruders recaptured by the government forces last year. "We are considering the plan," he added.



VILLAGERS seen returning to their homes in Baan Kor Village of Nakhon Phanom District in Ubon Ratchathani Province.

ENCLOSURE I

BANGKOK - THE NATION 4/11/91